

OMNI™ Slot Reader

TTL User's Manual



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Cypress, California 90630
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80028503-005

Rev. D

R05/07

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Value through Innovation

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AGENCY APPROVED

Specifications for subpart B of part 15 of FCC rule for a Class A computing device.

LIMITED WARRANTY

ID TECH warrants this product to be in good working order for a period of one year from the date of purchase. If this product is not in good working order as warranted above, or should this product fail to be in good working order at any time during the warranty period, repair or replacement shall be provided by ID TECH.

This warranty does not cover incidental or consequential damages incurred by consumer misuse, or modification of said product. For limited warranty service during the warranty period, please contact ID TECH to obtain an RMA number and instructions for returning the product.

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CLOCK: The CLOCK output is narrow pulse normally low, and goes high when data is valid. The data level is stable at both the rising and falling edges of the CLOCK pulse. CLOCK pulse width is typically 32 microseconds.

CARD PRESENT: The CARD PRESENT signal indicates data is being read from the media being passed through the slot. It will not switch until flux reversals (magnetic pulses) have been detected. After the flux reversals have been detected, CARD PRESENT goes low. It stays low throughout the reading process and for 5 to 10 milliseconds, after the last flux reversal is read. Typically, CARD PRESENT is used to signal the start and finish of a card read. It may also be used as an interrupt signal for alerting the firmware that the reading operation is in process. This is an open drain output which usually has an external pull-up resistor. If required, CARD PRESENT signals from more than one read circuit may be tied together to provide a single signal.

DATA: The DATA output level indicates the value of the bit being decoded during a CLOCK pulse. It is a low level for ones (1) and a high level for zeros (0). The DATA signal's level is steady at the rising and falling edges and during the low level of the CLOCK pulse.

BARCODE DATA SIGNAL: The Barcode Data Output is a single open collector output that is normally at high impedance and at a high voltage level based on the supply voltage to the external pull-up resistor. The output is low to indicate a White area and high to indicate a Black area. The rising and falling edges represent the contrast edges between White and Black as the barcode is scanned. ID TECH supplies barcode decoder ASIC and decoder electronics as separate product.

OPERATION

Make sure the Omni is properly cabled and is receiving sufficient power. To read a card, slide the card, in either direction, through the slot, with the magnetic stripe facing the magnetic head or the bar code facing the bar code module, as appropriate.

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Make sure the Omni is properly cabled and is receiving sufficient power. To read a card, slide the card, in either direction, through the slot, with the magnetic stripe facing the magnetic head or the bar code facing the bar code module, as appropriate.

I/O for magnetic stripe only reader with Tinned Wires

COLOR	SIGNAL
BROWN	DATA 1
YELLOW	DATA 2
ORANGE	DATA 3
BLUE	CLK 1
GREEN	CLK 2
GRAY	CLK 3
WHITE	CARD PRESENT
RED	+5 VDC
BLACK	GROUND

I/O for bar code only reader with Tinned Wires

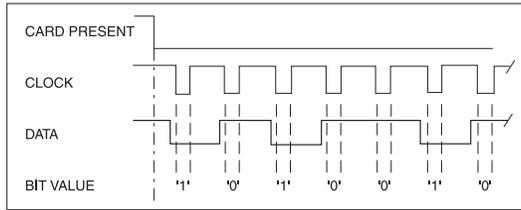
COLOR	SIGNAL
PURPLE	BAR CODE DATA
RED	+5 VDC
BLACK	GROUND

I/O for magnetic stripe & bar code reader with Tinned Wires

COLOR	SIGNAL
BROWN	DATA 1
YELLOW	DATA 2
ORANGE	DATA 3
BLUE	CLK 1
GREEN	CLK 2
GRAY	CLK 3
WHITE	CARD PRESENT
PURPLE	BAR CODE
RED	+5 VDC
BLACK	GROUND

MAGSTRIPE DATA, CLOCK & CARD PRESENT SIGNALS

The following is a timing diagram of typical DATA and CLOCK signals from ID TECH electronics:



I/O for magnetic stripe only reader with Tinned Wires

COLOR	SIGNAL
BROWN	DATA 1
YELLOW	DATA 2
ORANGE	DATA 3
BLUE	CLK 1
GREEN	CLK 2
GRAY	CLK 3
WHITE	CARD PRESENT
RED	+5 VDC
BLACK	GROUND

I/O for bar code only reader with Tinned Wires

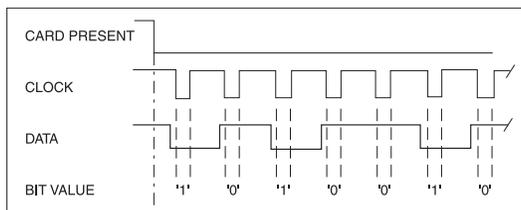
COLOR	SIGNAL
PURPLE	BAR CODE DATA
RED	+5 VDC
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I/O for magnetic stripe & bar code reader with Tinned Wires

COLOR	SIGNAL
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GREEN	CLK 2
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PURPLE	BAR CODE
RED	+5 VDC
BLACK	GROUND

MAGSTRIPE DATA, CLOCK & CARD PRESENT SIGNALS

The following is a timing diagram of typical DATA and CLOCK signals from ID TECH electronics:



SPECIFICATIONS

Power Requirements, Bar Code:	Power +5 VDC +/-10% (35mA maximum). Ground 0 VDC (GND).
Power Requirements, Magnetic:	Power +5 VDC +/-10% (50mV ripple maximum). Ground 0 VDC (GND). Chassis Ground connected to GND and magnetic head case.
Operating Current:	30mA maximum for bar code only. 5mA for magnetic stripe only.
Operating Temperature:	32° F to 131° F (0° C to 55° C).
Weatherproof Option:	-31° F to 140° F (-35° C to 60° C) without ice build-up on magnetic head.
Storage Temperature:	-31° F to 140° F (-35° C to 60° C).
Relative Humidity:	Maximum 95% non-condensing.
Magnetic Head Life:	1,000,000 passes minimum.
Rail and Cover Life:	1,000,000 passes minimum.
Magnetic Read Rate:	Less than one error in 500,000 bits on cards conforming to ISO 7811 1-5 (not induced by operator error).
Bar Code Source Light:	Visible red 660 nm or Infrared 930 nm.
Minimum Bar Code PCS:	60%.
Bar Code Centerline:	.49 inches (12.50mm) from bottom of slot to center of reading window.
Bar Code Resolution:	.006 inches (6 mil) minimum.
Magnetic Stripe Formats:	ISO 7811, AAMVA, and CA DMV.
Swipe Speed:	<u>Bar Code</u> 5 to 65 inches per second, bi-directional. <u>Magnetic Stripe</u> 3 to 60 inches per second, bi-directional.
Card Width:	<u>Bar code media</u> .005 to .050 inches. <u>Magnetic stripe media</u> .01 to .050 inches.

SPECIFICATIONS

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Card Width:	<u>Bar code media</u> .005 to .050 inches. <u>Magnetic stripe media</u> .01 to .050 inches.

Slot Width:	.055 inches (1.37mm)
Dimensions:	Length: 5 inches (127mm). Width: 2.05 inches (52mm).
Height:	1.38 inches (35mm).
Weight:	1 lb.
Cable Length:	2-foot unterminated cable.

DESCRIPTION

The rugged Omni™ slot reader can read bar codes, or 1, 2, or 3 tracks of magnetic stripe information in heavy-use applications. The Omni has a metal base and thick plastic housing. The metal base allows for mounting with screws or Velcro fasteners. The single I/O cable provides the connections for electrical power and decoded data signals. There are three options for the I/O cable. If the I/O cable is terminated with a 9-pin connector, the Omni will be either a magnetic stripe reader or a barcode reader (not both). If the I/O cable is terminated with striped and tinned wires, the Omni can be a magnetic stripe reader, a barcode reader, or able to read both technologies.

The electronics for magnetic stripe media are located on a single PCA mounted below the 99mm rail assembly. TTL level signals (data and clock) go directly out through an I/O cable. The electronics for bar code media are located on a single PCA mounted to the bar code module. Again, TTL level signals go directly out through an I/O cable.

The Omni reliably processes data encoded within ANSI and ISO standards, on both high and low coercivity magnetic media. The circuit is designed to read cards demagnetized down to 30% or 40% of ISO and ANSI signal levels, on tracks 1/3 or 2 respectively. These reading characteristics are designed to insure that the Omni will reliably read 'real world' cards.

In order to insure reliable reading under varying conditions, the Omni will read magnetic media at speeds from 5 inches per second (IPS) to 55 IPS with typical accelerations. The output signals consist of a DATA and CLOCK for each encoded track. The electronics operate with 5VDC ± 10%.

A CARD PRESENT signal is provided to alert the host when magnetic media is passed through the reader. It is activated after magnetic pulses

3

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A CARD PRESENT signal is provided to alert the host when magnetic media is passed through the reader. It is activated after magnetic pulses

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(10 for Track 2 or 24 for Tracks 1 and 3) have been detected and stays valid until after the last pulse is read. Media may be read bi-directionally without any pre-conditioning of the electronics, although the host system must employ enough data storage to ensure it can properly store and utilize the decoded bit sequence.

I/O CABLE CONNECTIONS (9-PIN)

The undecoded Omni reader can be connected to a decoder box using a 9-pin squeeze-to-release connector. Pinout designations for bar code and magnetic versions are as follow:

MAGNETIC

PIN	COLOR	SIGNAL
1	BLUE	CLK1
2	BROWN	DATA1
3	GRAY	CLK3
4	YELLOW	DATA2
5	GREEN	CLK2
6	ORANGE	DATA3
7	BLACK	GND
8	WHITE	CARD PRESENT
9	RED	VCC

BAR CODE

PIN	COLOR	SIGNAL
1	—	—
2	BROWN	DATA*
3	—	—
4	—	—
5	—	—
6	—	—
7	BLACK	GND
8	—	—
9	RED	VCC

*Host needs to provide 8.2K pull-up resistor (for TTL barcode only).

4

(10 for Track 2 or 24 for Tracks 1 and 3) have been detected and stays valid until after the last pulse is read. Media may be read bi-directionally without any pre-conditioning of the electronics, although the host system must employ enough data storage to ensure it can properly store and utilize the decoded bit sequence.

HOST CONNECTIONS

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PIN	COLOR	SIGNAL
1	BLUE	CLK1
2	BROWN	DATA1
3	GRAY	CLK3
4	YELLOW	DATA2
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7	BLACK	GND
8	WHITE	CARD PRESENT
9	RED	VCC

BAR CODE

PIN	COLOR	SIGNAL
1	—	—
2	BROWN	DATA
3	—	—
4	—	—
5	—	—
6	—	—
7	BLACK	GND
8	—	—
9	RED	VCC

*Host needs to provide 8.2K pull-up resistor (for TTL barcode only).

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